Comment

Women sort through discarded plastic bottles in Bangladesh.

The global plastics treaty can be saved — here's how to break the deadlock

Paul Einhäupl, Linda Del Savio, Melanie Bergmann & Annika Jahnke

The stalled multinational effort to protect the environment and human health from plastic pollution is salvageable, with a revamped negotiation process.

P lastic pollution is a scourge of land and seas, and has reached Earth's remotest regions[1]. Failure to deal with it could mean exposing ecosystems and people to harmful microplastics, nanoplastics and chemicals[2] for centuries. Transported globally, including by rivers and the wind[2], plastics are intertwined with issues around equity and justice. Many of the communities that are most harmed by plastic pollution, for instance, are those that are least responsible for producing it[3] (see 'A giant problem').

Plastics' persistence over time, ability to cross borders and impacts on climate change demand international regulation. Production alone is responsible for around 5% (2.24 giga-tonnes of carbon dioxide equivalent) of global greenhouse-gas emissions, compared with the 1.4% (0.6 $GtCO_2$) of emissions that stem from aviation[4]. In recognition of this, in March 2022, the United Nations Environment Assembly (UNEA), the organization's highest environmental decision-making body, established the Intergovernmental Negotiating Committee (INC) to develop a global treaty to end plastic pollution, including in the ocean.

Yet, following six rounds of negotiations over more than three years, delegates from 184 member states remain deadlocked. After ten days of debate at a reconvened fifth session in Geneva, Switzerland, in August 2025, no agreement on a treaty could be reached.

As official observers of the INC process (P.E. and L.D.S.) and advisers among the roughly 20-person German delegation (M.B. and A.J.), we have become convinced that the INC process — as currently designed — won't succeed. But on 7 February, a new INC chair will be elected. Several key procedural changes, if implemented and overseen by the new chair, could break the impasse and pave the way for an effective global plastics treaty.

Why the deadlock?

Creating a global plastics treaty was never going to be easy, as many experts have pointed out[5].

First, negotiators have been trying to converge on rules about regulating plastics globally within a complex and fragmented pre-existing governance landscape for waste and pollution[6].

Although far from adequate to deal with the growing problem of plastic pollution, various

TIMELINES FOR AGREEMENTS

Multilateral agreements addressing pollution have generally become more complex over the past few decades and have taken longer to materialize.
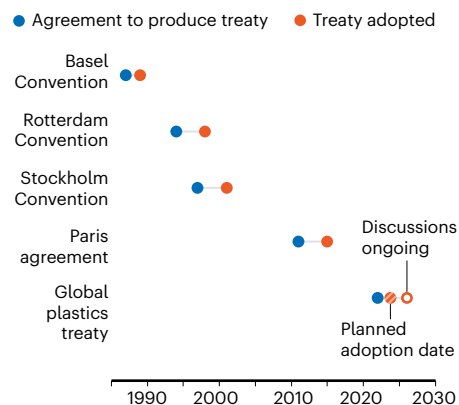
Plastic waste covers the Jambe River in West Java, Indonesia.

conventions already regulate pollution from ships and the cross-border movement and trade of hazardous substances and waste, including some plastics. These include the London Convention, which entered into force in 1975; Annex V to the International Convention for the Prevention of Pollution from Ships, which entered into force in 1988; the 1992 Basel Convention; and the Rotterdam and Stockholm conventions, both of which entered into force in 2004.

Meanwhile, at regional and national levels, several countries have introduced policies that affect the production or use of plastics (upstream interventions) or the collection, incineration, recycling or repurposing of plastic waste (downstream interventions).

Second, partly because most pre-existing multilateral environmental agreements regulate the downstream components of the life cycle of plastics, the INC was mandated to take a more precautionary approach and consider the full life cycle. But addressing plastic pollution holistically means considering all sorts of interlinked and politically fraught issues — from resource extraction, production, trade, use and disposal to financing and equity.
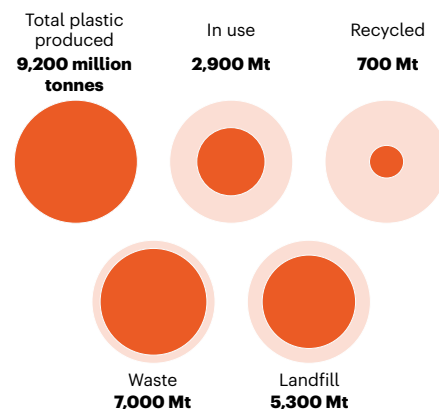
Third, countries tend to take different positions on the various aspects that need to be debated, depending on the drivers of their economies.

Some economies that are heavily dependent on oil and gas, such as the United States, Russia and Arab states, generally support regulating waste management — so focus on downstream interventions. Other countries, such as those with significant Indigenous populations, small island states and coastal states[7], many of which are disproportionately affected by plastic pollution[3], support regulations across the entire life cycle of plastics. These policies might involve banning the production of certain plastics, the regulation of chemical design, or financial aid to bolster collection infrastructure, recycling and the remediation of existing pollution in low- and middle-income countries. Highly regulated industrial economies, including the European Union (EU), Norway and Canada, meanwhile, push for ambitious global standards to level the playing field and increase their access to international markets, while protecting human and environmental health.

Finally, there's the problem of intense lobbying by industry. Fossil-fuel and petrochemical industry representatives have been present in growing numbers since the second round of negotiations. And some have used tactics, such as strong messaging on the benefits of plastics to delegates, to delay, weaken or derail measures, particularly those concerning caps on the production of plastics.

> ## "The current structure of the INC process is not fit for purpose."

All of these challenges, however, are standard for multilateral environmental agreements. Similar difficulties, particularly with respect to member states pulling in different directions, were overcome before 198 parties ratified the Montreal Protocol to protect the ozone layer. The same was true before 196 parties adopted the Paris agreement by consensus in 2015.

In our view, the repetitive, fragmented debates that are typical of INC negotiations are largely the result of how the process has been structured and governed.

Pitfalls in the process

Three design flaws are proving particularly problematic.

Lack of prioritization and sequential decision-making. The document[8] resulting from the 2022 UNEA meeting — UNEA Resolution (5/14) — states that the INC should address "the full life cycle of plastic". But member-state delegates deliberately interpret 'full life cycle' differently, depending on their countries' economic interests. In the reconvened fifth session, for example, some delegates argued that the term does not include extraction. Others maintained that it does not refer to health impacts (see 'Interacting impacts').

Likewise, UNEA Resolution (5/14) states that a global plastics treaty must "complement" existing agreements. But, to stall proceedings, some delegates have used the argument that a number of the problems posed by plastics are already being addressed (or could be addressed) by pre-existing regulations.

Certain delegations repeatedly argue, for example, that together, the Basel Convention (which controls the trade and disposal of hazardous waste, including some plastics) and the Stockholm Convention (which regulates persistent organic pollutants, meaning toxic chemicals) already address problems associated with plastics and related chemicals. But most plastics would not be defined as hazardous waste

A GIANT PROBLEM

Of the vast amount of plastic produced between 1950 and 2017, the majority has ended up as waste — and most of this has ended up in landfill.

Total plastic produced	In use	Recycled
9,200 million tonnes	**2,900 Mt**	**700 Mt**

Waste	Landfill
7,000 Mt	**5,300 Mt**

under the Basel Convention. Furthermore, only about 6% of the more than 16,000 chemicals that can be intentionally used, or that are unintentionally present in plastics, are regulated under the Basel and Stockholm conventions and the Minamata Convention, which came into force in 2017 (ref. 9).

In our view, at the very least, priorities must be defined and decisions made about whether caps on plastic production, regulations on chemicals and products of concern, and financing schemes are to be included in the treaty early in the process, before subsequent decisions can be made.

Compressed timeline. The INC's original remit was to deliver a global treaty by the end of 2024. This ambitious timeline for a complex treaty (see 'Timelines for agreements') has hindered prioritization and sequential decision-making, and has pushed negotiators to debate details before ensuring that everyone concurs on the basics.

The timeline has also driven negotiators to debate interconnecting issues in parallel sessions. In one room, participants might be discussing caps on plastics production or bans on the use of certain chemicals. In an adjoining room, another group might be trying to tackle how plastic-waste management in low- and middle-income countries might be financed. Yet, in many cases, reaching agreement on one issue could help to do the same elsewhere. If an agreement to cap plastic production was reached, for example, countries with more-ambitious goals would probably be more willing to contribute financially to collection schemes and the funding of remediation. Currently, such countries do not support subsidizing waste management for escalating amounts of production.

Inadequate procedural rules. Whether co-chairs (delegates appointed to moderate discussions) have the authority to synthesize contributions and propose draft text is currently unclear. This makes the drafting process inefficient and laborious, especially when combined with other ambiguities around the process and the fact that there are parallel tracks of discussion. (Each discussion group can be focused on between 2 and 20 or more treaty articles.) It also means that considerable time is spent arguing about the INC process itself rather than about the contents of the treaty.

A lack of well-defined rules similarly obstructs the management of disputes. If two opposing positions emerge in a formal discussion group (called a contact group) and there is no way to reach agreement in the group, informal negotiations can take place without observers present. It is unclear, however, whether or how the 'informals' then affect the draft text, which further erodes trust and paves the way for yet more disagreement.

INTERACTING IMPACTS

Producing an effective global plastics treaty means considering the many potential effects of interlinked processes on human and planetary health.

Stage	Examples of impacts
Resource extraction	People working at or living near petroleum extraction and refining sites are more likely to develop cancer.
Production	Plastic production alone generates around 5% of global greenhouse-gas emissions.
Trade	Shipping is an important direct source of plastic pollution in the ocean.
Use	Around 6 million tonnes of tyre plastic particles are released into the environment annually from road wear.
Recycling	Recycling facilities release toxic and hazardous waste, including microplastics.
Pollution	Thousands of marine species encounter plastics. Many of these encounters have negative effects.
Landfill	People living near landfill sites are more likely to develop cancer.

Without adequate and transparent rules on procedure, more and more text that lays out ever-more nuanced positions on an issue will continue to be added to draft text. And some delegations will keep using the 'nothing is agreed until everything is agreed' mantra to stall negotiations.

Since the second INC session was held in Paris, delegates have been unable to agree even on a process decision — specifically, whether to allow, under well-defined circumstances, delegates to vote and decisions to be based on majority rule rather than on consensus. We became convinced at the reconvened fifth session in Geneva that the current structure of the INC process is not fit for purpose. During the fifth negotiation round in Busan, South Korea, delegates seemed to be converging on how to deal with discarded fishing gear. In Geneva, the text was opened up for discussion again, and because so much nuance was added, agreement broke down.

Another way

To break the deadlock and shift the INC towards convergence, we propose that the new chair immediately implements three changes.

First, the heads of member-state delegations could gather in a closed meeting to debate key issues and set priorities. Other issues could then be debated subsequently in parallel sessions that are open to all delegates and observers.

Such a hierarchical structure would allow delegates to lock down agreement on some of the cross-cutting issues earlier in the process. This would, in turn, help to restore trust in the INC process and make subsequent decision-making easier.

Second, instead of everyone working towards producing a treaty in a highly ambitious time frame, delegates should work towards achieving defined milestones, such as agreement on whether caps on plastics production will be included in the treaty text. More realistic and better-defined goals at the outset (along with a hierarchical structure) would facilitate more equitable participation by enabling member states to use resources more effectively and send delegates with the appropriate expertise to specific negotiation rounds. (In the sessions conducted so far, translators have been present only at the plenary sessions, and negotiators representing countries on their own or as part of only a small delegation have had to spread themselves thinly, ducking in and out of sessions and missing parts of the discussion.) It would also help to re-establish trust in the INC process.

Milestones could, of course, be used strategically to delay progress or prolong negotiations, but setting time limits and permitting extensions only under certain conditions (say, if delegates are fairly evenly split on an issue) would mitigate this risk.

Third, clear procedural rules would foster trust and ensure that more time is spent debating what the treaty should say. Rules are needed, especially, on who is allowed to do what when it comes to writing draft text, and on how output from the informal sessions that are designed to resolve conflicts should be documented and incorporated into draft text. Such guidance would lessen the likelihood of delegates becoming mired in repetitive debate about procedures, and reduce the risk of settled disputes being reopened.

Once progress has been demonstrated and trust rebuilt, say by there being fewer disputes, under certain clearly specified circumstances, voting could be deployed and decisions based on majority rule. Such a mechanism would not undermine the importance of obtaining consensus. On the contrary, having such a policy in place could even increase the likelihood of delegates reaching a consensus. It would also lessen the chances of progress being blocked when broad support for a policy emerges.

The rules of procedure of the Basel, Rotterdam and Stockholm conventions allow for a two-thirds majority vote as a last resort if consensus on an important matter, such as an amendment, cannot be reached. In fact, this rule was deployed during a joint meeting of the governing bodies of the Basel, Rotterdam

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and Stockholm conventions in 2019 following a 15-year debate. Obviously, implementing this qualified majority voting would be politically challenging and feasible only if voting was used sparingly and transparently, and without overlooking or dismissing the concerns of countries with less power.

Seize the moment

The choices made now will determine whether the health of people and the planet are safeguarded or put at further risk. We urge the INC's newly elected chair to consider implementing these reforms.

Multiple events during the past few years have undermined multilateralism. And as geopolitical priorities shift, environmental concerns are increasingly being sidelined or environmental policies weakened[10].

Against this backdrop, it is crucial that the INC process succeeds – both to address a major contributor to the interconnected planetary crises (climate change, biodiversity loss and pollution) and to restore faith in the idea that international cooperation can solve global challenges.

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Does AI already have human-level intelligence? The evidence is clear

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By any reasonable criteria, the vision of human-level machine intelligence laid out by Alan Turing in 1950 is now a reality. Eyes unclouded by dread or hype will help to prepare for what comes next.

In 1950, in a paper entitled 'Computing Machinery and Intelligence'[1], Alan Turing proposed his 'imitation game'. Now known as the Turing test, it addressed a question that seemed purely hypothetical: could machines display the kind of flexible, general cognitive competence that is characteristic of human thought, such that they could pass themselves off as humans to unaware humans?

Three-quarters of a century later, the answer looks like 'yes'. In March 2025, the large language model (LLM) GPT-4.5, developed by OpenAI in San Francisco, California, was judged by humans in a Turing test to be human 73% of the time – more often than actual humans were[2]. Moreover, readers even preferred literary texts generated by LLMs over those written by human experts[3].

This is far from all. LLMs have achieved gold-medal performance at the International Mathematical Olympiad, collaborated with leading mathematicians to prove theorems[4], generated scientific hypotheses that have been validated in experiments[5], solved problems from PhD exams, assisted professional programmers in writing code, composed poetry and much more — including chatting 24/7 with hundreds of millions of people around the world. In other words, LLMs have shown many signs of the sort of broad, flexible cognitive competence that was Turing's focus — what we now call 'general intelligence', although Turing did not use the term.

Yet many experts baulk at saying that current AI models display artificial general intelligence (AGI) – and some doubt that they ever will. A March 2025 survey by the Association for the Advancement of Artificial Intelligence in Washington DC found that 76% of leading researchers thought that scaling up current AI approaches would be 'unlikely' or 'very unlikely' to yield AGI (see go.nature.com/4smn16b).

What explains this disconnect? We suggest that the problem is part conceptual, because definitions of AGI are ambiguous and inconsistent; part emotional, because AGI raises fear of displacement and disruption; and part practical, as the term is entangled with commercial interests that can distort assessments. Precisely because AGI dominates public discourse, it is worth engaging with the concept in a more detached way: as a question about intelligence, rather than a pressing concern about social upheaval or an ever-postponed milestone in a business contract.

In writing this Comment, we approached this question from different perspectives — philosophy, machine learning, linguistics and cognitive science — and reached a consensus after extensive discussion. In what follows, we set out why we think that, once you clear away certain confusions, and strive to make fair comparisons and avoid anthropocentric biases, the conclusion is straightforward: by reasonable standards, including Turing's own, we have artificial systems that are generally intelligent. The long-standing problem of creating AGI has been solved. Recognizing this fact matters — for policy, for risk and for understanding the nature of mind and even the world itself.

Questions of definition

We assume, as we think Turing would have done, that humans have general intelligence. Some think that general intelligence does not exist at all, even in humans. Although this view is coherent and philosophically interesting, we set it aside here as being too disconnected from most AI discourse. But having made this assumption, how should we characterize general intelligence?

A common informal definition of general intelligence, and the starting point of our discussions, is a system that can do almost all cognitive tasks that a human can do[6,7].